

ABSTRACT

A non-aqueous electrolyte cell having improved cyclic characteristics at elevated temperatures. The non-aqueous electrolyte cell includes a positive electrode, a negative electrode and a non-aqueous electrolyte. The positive electrode contains, as a positive electrode active material, a lithium transition metal composite oxide represented by the general formula $\text{LiCo}_x\text{A}_y\text{B}_z\text{O}_2$ where A denotes at least one selected from the group consisting of Al, Cr, V, Mn and Fe, B denotes at least one selected from the group consisting of Mg and Ca and x, y and z are such that $0.9 \leq x < 1$, $0.001 \leq y \leq 0.05$ and $0.001 \leq z \leq 0.05$.

according to claim 12 wherein

said negative electrode, capable of lithium doping/undoping of lithium ion, comprises carbonaceous material which is selected from the group of pyrocarbon, pitch coke, needle coke, petroleum coke, graphites, vitreous carbon fibers, sintered organic high polymer compounds, carbon fiber, and activated charcoal.

14. A method for the preparation of a non-aqueous electrolyte secondary cell according to claim 12 wherein

said negative electrode is a material that can be alloyed with lithium and includes a compound represented by a chemical formula $M_x M'_y Li_z$ where M is a typical element of the group 3B or a metal other than the group 4B excluding carbon, M' is one or more metal element other than the element Li and the element M, x is a numerical value larger than 0 and y, z are numerical values not less than 0.

15. A method for the preparation of a non-aqueous electrolyte secondary cell according to claim 11 wherein

said electrode is a band-shaped positive electrode and a band-shaped negative electrode, said positive electrode and said negative electrode being stacked and wound spirally by interposing a separator in-between.

16. A method for the preparation of a non-aqueous electrolyte secondary cell according to claim 11 wherein

said electrolyte is a solution of an electrolyte in a non-protonic non-aqueous solvent.